

## WHAT IS CLAIMED IS:

1. A respirator breathing gas tube for supplying a user with breathing gas, the breathing tube, comprising:

a sensor means at an end of the breathing gas tube facing away from the respirator;

a signal line extending along the breathing gas tube and designed to transmit signals of the sensor means to the respirator;

a contactless interface between the signal line and the sensor means.

2. A breathing gas tube in accordance with claim 1, wherein the signal line comprises a fiberoptic waveguide.

3. A breathing gas tube in accordance with claim 1, wherein the signal line is a two-wire line.

4. A breathing gas tube in accordance with claim 1, wherein the signal transmission between the respirator and the sensor means takes place bidirectionally via a BUS system.

5. A breathing gas tube in accordance with claim 3, wherein the two-wire line is additionally designed as a tube heater.

6. A breathing gas tube in accordance with claim 3, wherein the contactless interface includes a first inductive interface.

7. A breathing gas tube in accordance with claim 6, wherein the first inductive interface is designed to transmit a supply voltage to the sensor means in addition to the signals.

8. A breathing gas tube in accordance with claim 1, wherein the contactless interface is an infrared interface.

9. A breathing gas tube in accordance with claim 1, wherein the sensor means is designed as an individual sensor means or as a combination for a measurement of temperature, humidity, flow, gas concentration or pressure.

10. A breathing gas tube in accordance with claim 3, wherein a second inductive interface is provided between the breathing gas tube and the respirator.

11. A process for using respiration system with a respirator, the process comprising the steps of :

providing a sensor means for sensing breathing gas characteristics;

providing a breathing gas tube;

providing a contactless interface between the breathing gas tube and the sensor for transmitting sensor signals.

12. A process according to claim 11, further comprising:

disposing the sensor means at an end of the breathing gas tube facing away from the

respirator;

providing a signal line extending along the breathing gas tube and transmitting signals of the sensor means to the respirator with the contactless interface being provided between the signal line and the sensor means.

13. A process according to claim 12, wherein the signal line comprises one of a fiberoptic waveguide and a two-wire line.

14. A process in accordance with claim 11, wherein the signal transmission between the respirator and the sensor means takes place bidirectionally via a BUS system.

15. A process in accordance with claim 13, wherein the two-wire line is additionally heats the breathing gas tube.

16. A process in accordance with claim 13, wherein the contactless interface includes one of an inductive interface and an infrared interface.

17. A process in accordance with claim 11, wherein the sensor means measures one or more of temperature, humidity, gas flow, gas concentration or gas pressure.

18. A respiration system, comprising:

a respirator/ventilator;

a breathing gas tube for supplying a user with breathing gas, the breathing tube being connected to said respirator/ventilator at a proximal end and said breathing gas tube having a distal end;

a sensor at a distal end of said breathing gas tube;

a signal line extending along said breathing gas tube for transmitting signals of the sensor to said respirator/ventilator;

a contactless interface between said signal line and said sensor.

19. A respiration system in accordance with claim 18, wherein the signal line comprises one of a fiberoptic waveguide and a two-wire line establishing bidirectionally signal transmissions between said respirator/ventilator and said sensor.

20. A respiration system in accordance with claim 19, wherein the two-wire line is additionally designed as a tube heater.

21. A respiration system in accordance with claim 18, wherein the contactless interface includes one of an inductive interface and an infrared interface.